

## REMARKS

Claims 1-29 were rejected prior to the Office Action. In the Office Action claims 1-29 were rejected and claims 18 and 20 were objected to. In this response, claims 1, 18, and 20 are amended. Claims 1-29 are pending.

### **Claim Objections**

The Office Action states:

8. Claims 18 and 20 are is objected to because of the following informalities:
- h. Claim 18, "...program in a tangible medium" should be read as "...program stored in a tangible medium."
- i. Claim 20, "The method according. . ." should be read as "The computer program according. . . ."

Office Action, page 3.

Applicants have amended claims 18 and 20.

### **Claim Rejections Under 35 U.S.C. § 101**

Applicants have amended claims 1 and 18. Applicants contend that these claims, as amended, and dependent claims comply with 35 U.S.C. § 101.

### **Claim Rejections Under 35 U.S.C. § 102**

The Office Action states:

10. Claims 1-29 are rejected under 35 U.S.C. 102(b) as being anticipated by M. Y. Soliman, J. L. Hunt, and A. M. Elrabaa, "Fracturing Aspects of Horizontal wells", herein referred as Soliman, 1990 Society of Petroleum Engineers, pages 966-973.

As per Claim 1:

Soliman discloses a method of optimizing a number, placement and size of fractures in a subterranean formation (See; "Summary" in page 966) comprising the steps of:

- (a) determining one or more geomechanical stresses induced by each fracture based on the dimensions and location of each fracture (such as. . . *three methods to determine stress magnitude and/or orientation. . .*; See: page 967, Section "Determining Magnitude and Orientation of Least Principal Stress" lines 5-14);
- (b) determining a geomechanical maximum number of fractures based on the geomechanical stresses induced by each of the fractures (such as. . . *reaching five*

*fractures after a month (i.e. five fractures are maximum number of fractures) but declined to only two fractures after 24 month. . . ; See: page 969, middle column, lines 9-13); and (c) determining a predicted stress field based on the geomechanical stresses included by each fracture (such as . . .summary of Stress Data. . . ; See: Table 2).*

Office Action, page 4.

Applicants disagree. Claim 1 requires, in part, “determining one or more geomechanical stresses **induced by each fracture based on the dimensions and location of each fracture.**” Soliman does not disclose this limitation. The Office action argues that this limitation is disclosed by Soliman at page 967 at lines 5-14. That portion of Soliman, however, discusses determining the magnitude and orientation of least principal stress in a formation. It does not include any discussion of determining the stresses induced by each fracture, as required by the claim. The cited section of Soliman does not mention a fracture, much less the stresses induced in the formation by the fracture. Other portions of Soliman similarly fail to disclose this limitation.

Claim 1 further requires, in part, “determining a geomechanical maximum number of fractures based on the geomechanical stresses induced by each of the fractures.” This limitation is not disclosed in Soliman. The Office action cites a portion of Soliman that states “[t]he number of fractures at which the maximum flow rate occurs declines with time, reaching five fractures after 1 month but declining to only two fractures after 24 months.” Soliman, at 969. Soliman’s discussion of “number of fractures at which the maximum flow rate occurs” is not a disclosure of “**a geomechanical maximum number of fractures.**” For example, a given formation may be able to support a large number of fractures geomechanically, but the number of fractures required for maximum flow rate may be much less. Furthermore, Soliman’s determination of “[t]he number of fractures at which the maximum flow rate occurs” is not based on “**stresses induced by each of the fractures,**” as required by the claim.

For at least these reasons Soliman fails to disclose the limitations of claim 1. Independent claims 18 and 24 include similar limitations, which are similarly not disclosed by Soliman. Each of the remaining claims depends from one of claims 1, 18, or 24 and are therefore patentable over the cited references.

**SUMMARY**

Applicants contend that the claims are in condition for allowance, which action is requested. Should any additional fees be required, Applicants request that the fees be debited from deposit account number 02-0383.

Respectfully submitted,

/Bradley S. Bowling/

Bradley S. Bowling

Reg. No. 52,641

ATTORNEY FOR APPLICANTS

Date: September 24, 2007